

Application No.: 10/523,492

Docket No.: SR0020

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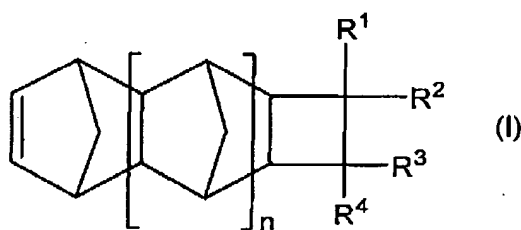
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Listing of Claims

Claim 1. (Original) A fluorine-containing copolymer comprising:

- (a) at least one repeat unit derived from an ethylenically unsaturated compound having at least one fluorine atom covalently attached to an ethylenically unsaturated carbon atom; and
- (b) at least one repeat unit derived from an ethylenically unsaturated cyclic compound of structure (I):



wherein n is 0, 1, or 2; and

R^1 to R^4 are independently H; $C_1 - C_{10}$ alkyl or alkoxy, optionally substituted by halogen or ether oxygens; or $C_6 - C_{20}$ aryl.

Claim 2. (Original) The copolymer of Claim 1, wherein (a) is derived from a fluoro-olefin comprising 2 to 20 carbon atoms.

Claim 3. (Original) The copolymer of Claim 2, wherein the fluoro-olefin is selected from the group consisting of tetrafluoroethylene; hexafluoropropylene; chlorotrifluoroethylene; vinylidene fluoride; vinyl fluoride; perfluoro-(2,2-dimethyl-1,3-dioxole); perfluoro-(2-methylene-4-methyl-1,3-dioxolane); $CF_2=CFO(CF_2)_tCF=CF_2$, wherein t is 1 or 2; and $R_f''OCF=CF_2$ wherein R_f'' is a saturated fluoroalkyl group of from 1 to 10 carbon atoms.

Claim 4. (Original) The copolymer of Claim 3, wherein the fluoro-olefin is tetrafluoroethylene.

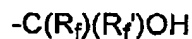
Claim 5. (Original) The copolymer of Claim 1, further comprising a fluoroalcohol group or a protected fluoroalcohol group.

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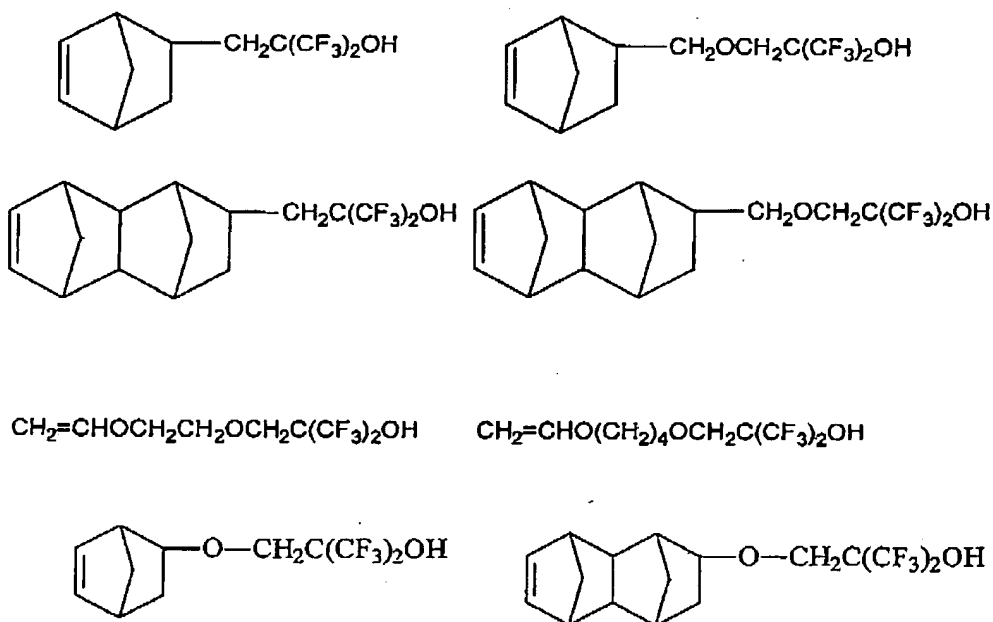
Claim 6. (Original) The copolymer of Claim 5, wherein the fluoroalcohol group or the protected fluoroalcohol group is derived from at least one ethylenically unsaturated compound containing a fluoroalcohol group having the structure:



wherein R_f and R_f' are the same or different fluoroalkyl groups of from 1 to 10 carbon atoms, or taken together are $(CF_2)_m$ wherein m is 2 to 10.

Claim 7. (Original) The copolymer of Claim 6, wherein R_f and R_f' are perfluoroalkyl groups.

Claim 8. (Original) The copolymer of Claim 6, wherein the ethylenically unsaturated compound containing the fluoroalcohol group or the protected fluoroalcohol group is derived from a monomer selected from the group consisting of:

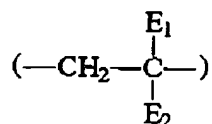


Claim 9. (Original) The copolymer of Claim 5, further comprising at least one acid-containing or protected acid-containing structural unit:

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wherein E₁ is H or C₁-C₁₂ alkyl; E₂ is CO₂E₃, SO₃E, or other acidic group; and E and E₃ are H or unsubstituted or heteroatom-substituted C₁-C₁₂ alkyl.

Claim 10. (Original) The copolymer of Claim 9, wherein the heteroatom is selected from the group consisting of oxygen, nitrogen, sulfur, halogen and phosphorus.

Claim 11. (Original) The copolymer of Claim 10, wherein the heteroatom is oxygen, and the substituent further contains a hydroxyl group.

Claim 12. (Original) The copolymer of Claim 9, wherein the acid-containing or protected acid-containing structural unit comprises a carboxylic acid group.

Claim 13. (Original) The copolymer of Claim 9, wherein the acid-containing or protected acid-containing structural unit is derived from a monomer selected from the group consisting of tert-butyl acrylate; 2-methyl-2-adamantyl acrylate; 2-methyl-2-norbornyl acrylate; acrylic acid; methyl acrylate; ethyl acrylate; propyl acrylate; 2-hydroxyethyl acrylate; 2-methoxyethyl acrylate; 2-cyanoethyl acrylate; glycidyl acrylate and 2,2,2-trifluoroethyl acrylate.

Claim 14. (Original) The copolymer of Claim 1, further comprising at least one group derived from a polar monomer.

Claims 15 – 36 (Canceled).